CLAIMS

1. A method of producing a temperature-compensated reference voltage comprising steps of:

providing a stacked bandgap cell including at least four bipolar elements; and

biasing at least a first of the four elements with a first quiescent current and biasing at least a second of the four elements with a second quiescent current;

wherein a temperature coefficient of the first quiescent current is different from a temperature coefficient of the second quiescent current.

2. The method as claimed in claim 1 wherein each of the at least four elements is a diode.

3. The method as claimed in claim 1 wherein each of the at least four elements is a transistor.

4. The method as claimed in claim 1 wherein the temperature coefficient of the first quiescent current is positive and the temperature coefficient of the second quiescent current is negative.

5. The method as claimed in claim 1 wherein the first quiescent current is equal to a temperature-independent current plus a temperature-dependent current, and the second quiescent current is equal to the temperature-independent current minus the temperature-dependent current.

6. The method as claimed in claim 5 further including a step of using an output voltage of the bandgap cell to produce the temperature-independent current.

7. The method as claimed in claim 6 wherein the a step of using includes providing the output voltage of the bandgap cell across a resistor to produce the temperature-independent current.

8. A bandgap cell that produces a first-order and a second-order temperature-compensated reference output voltage comprising:

at least first and second bipolar elements;

wherein the first bipolar element is biased with a first quiescent current and the second bipolar element is biased with a second quiescent current, a temperature coefficient of the first quiescent current being different from a temperature coefficient of the second quiescent current.

9. The bandgap cell of claim 8 wherein the at least first and second bipolar elements includes at least four bipolar elements.

10. The bandgap cell of claim 8 wherein each of the at least first and second bipolar elements is a transistor.

11. The bandgap cell of claim 8 wherein each of the at least first and second bipolar elements is a diode.

12. The bandgap cell of claim 8 wherein the temperature coefficient of the first quiescent current is positive and the temperature coefficient of the second is negative.

13. The bandgap cell of claim 8 wherein the first quiescent current is equal to a temperature-independent current plus a temperature-dependent current and the second quiescent current is equal to the temperature-independent current minus the temperature-dependent current.

14. The bandgap cell of claim 13 wherein the output voltage of the bandgap cell is used to produce the temperature-independent current.

15. The bandgap cell of claim 14 wherein the output voltage is placed across a resistor to produce the temperature-independent current.

16. The bandgap cell of claim 13 further including a current mirror to produce at least one additional copy of the temperature-dependent current.

17. The bandgap cell of claim 8 further including a gain amplifier coupled to at least the first and second bipolar elements.

18. A method for providing a temperature-compensated bandgap reference voltage comprising:

providing a bandgap reference voltage cell including at least two bipolar elements; and

realizing first and second order temperature compensation to the reference voltage within the bandgap cell.

19. The method as claimed in claim 18 further including the step of maintaining the bandgap reference voltage at approximately half of a full-scale reference voltage.

20. The method as claimed in claim 19 wherein the approximately half of the full-scale reference voltage is within the range of 2.3 volts to 2.7 volts.